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(54) RARE EARTH PERMANENT MAGNET

(57)Abstract:

PURPOSE: To obtain the excellent magnetic characteristics and a high Curie point, by providing a magnet with composition given by R, M, and Fe, where R are rare earth elements including Y, and M are V, Cr, Mn, etc., at atomic percentage in a specified range, and by providing the main phase with a body-centered tetragonal crystal structure.

CONSTITUTION: This rare earth permanent magnet is expressed by an equation RxMyFe_{1-x-y} (in the equation, R contains one or more kinds of rare earth element including Y; M contains one or more kinds out of V, Cr, Mn, Si, W, Nb, Mo, Ta, Al, Sn, Zr, Hf, Ge; and x is 5W9 and y is 1W10 atomic percent), and the main phase has a body-centered tetragonal crystal structure. The rare earth permanent magnet is made of a ternary alloy of R-M-Fe, and rare earth elements of La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu and Y are given as R. The rare earth permanent magnet is obtained by well-known powder metallurgy, by dissolving, casting, breaking to pieces, molding in a magnetic field, sintering and heat-treating a compound consisting of the above-mentioned elements.

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